IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: §
Joseph H. McCain §
§
Serial No.: 10/685,825 § Group Art Unit: 2813
§
Filed: October 13, 2003 § Examiner: Mitchell, James M.
§
For: Integrated Circuit Package with Laminated § Confirmation No.: 5265
Power Cell Having Coplanar Electrode §

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Commissioner for Patents
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RESPONSE TO FINAL OFFICE ACTION MAILED AUGUST 10, 2006

The present paper is submitted in response to the Final Office Action of August 10, 2006. No fees, including extension of time fees, are believed necessary for consideration of the present paper. However, if any fees are necessary, including extension of time fees, the extension of time is hereby requested, and the Commissioner is hereby authorized to charge any fees, including those for the extension of time, to Haynes and Boone, LLP's Deposit Account No. 08-1394.

Listing of claims begins on page 2 of this paper.

Remarks/Arguments begin on page 5 of this paper.

Listing of Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claims 1-28. (Canceled).

29. (Currently Amended) An integrated circuit package, comprising:

a lead frame assembly including a central support member and a plurality of conductive leads, wherein the central support member has opposing first and second major surfaces, and wherein the plurality of conductive leads are radially disposed about the periphery of the central support member;

an integrated circuit die coupled to the first surface of the central support member and having a plurality of bond pads;

a power cell coupled to the second surface of the central support member and comprising a cathode layer, an anode layer, and a separator layer interposing the cathode and anode layers, wherein the cathode layer is doped with a first impurity type and the anode layer is doped with a second, opposite impurity type, wherein the first and second impurity types are selected from an n-type impurity and a p-type impurity, wherein the cathode layer includes manganese dioxide doped with the first impurity type, wherein the separator layer includes lithium perchlorate, and wherein the anode layer includes lithium doped with the second impurity type;

an electrode including a planar body and a terminal extending from the body, wherein the body is coupled to the power cell opposite the central support member;

a plurality of first wire bonds each coupling one of the plurality of bond pads and one of the plurality of conductive leads; and

a second wire bond having a first terminus coupled to one of the plurality of bond pads and a second terminus coupled to the terminal of the electrode, wherein the terminal has an arcuate shape configured to position the second terminus of the second wire bond in a reference plane that is coincident with the first surface of the central support member.

30. (Canceled).

31. (Previously Presented) The package of claim 29 further comprising a laminated insulating layer substantially covering surfaces of the body and the terminal that are opposite the power cell.

32. (Previously Presented) The package of claim 31 wherein the insulating layer comprises one of a paper material and a polyester film material.

33. (Previously Presented) The package of claim 29 wherein the body and the terminal each comprise at least one of copper and nickel.

34. (Previously Presented) The package of claim 29 further comprising an electrical conduction enhancement material coating at least a portion of the electrode, wherein the electrical conduction enhancement material comprises graphite.

35. (Previously Presented) The package of claim 34 wherein the electrical conduction enhancement material is one of a graphite based, air-curable material and a graphite based, heat-curable material.

36. (Previously Presented) The package of claim 29 further comprising an insulating layer encapsulating the central support member, the integrated circuit die, the power cell, the electrode, the plurality of first wire bonds, and the second wire bond, collectively.

37. (Previously Presented) The package of claim 29 wherein the power cell further comprises a frame adjacent and extending along the perimeter of each of the cathode layer, the anode layer, and the separator layer, wherein the frame substantially comprises an insulating material.

38. (Previously Presented) The package of claim 29 wherein the power cell further comprises a frame adjacent and extending along the perimeter of each of the cathode layer, the anode layer, and the separator layer, wherein the frame is open at opposing first and second ends, the first end exposing the anode layer, and the second end exposing the cathode layer.

Claims 39-48. (Canceled).

REMARKS

Claims 1-20 were originally filed in the present application. Pursuant to a restriction requirement, claims 19 and 20 were subsequently canceled without prejudice or disclaimer. Claims 1-6 were also subsequently canceled without prejudice or disclaimer, and new claims 21-28 were added. Thereafter, claims 7-18 and 21-28 were canceled without prejudice or disclaimer, and new claims 29-48 were added. Currently, claims 30 and 39-48 are canceled without prejudice or disclaimer. Consequently, claims 29 and 31-38 remain pending in the present application.

Claim 29 is currently amended solely to incorporate the subject matter of previously-pending claim 30. Thus, the subject matter now recited in claim 29 has already been searched by the Examiner, such that the present amendment to claim 29 does not necessitate a new search by the Examiner. Accordingly, Applicant respectfully requests the Examiner enter the amendments herein proposed.

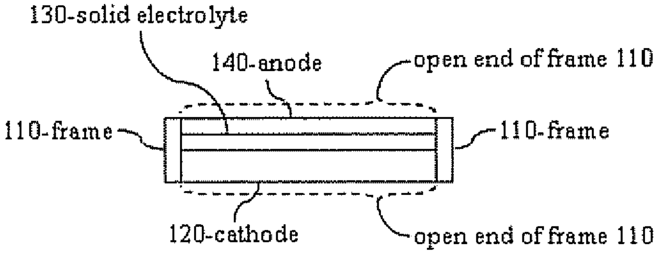
Moreover, the claim amendments presented herein are in compliance with 37 C.F.R. §1.116. That is, the amendments are either cancellations (claims 30 and 39-48) or present rejected claims in better form for consideration on appeal (claim 29). Therefore, for at least this reason, Applicant respectfully requests that the Examiner enter the claim amendments described above.

Reconsideration of this application in light of the above amendments and the following remarks is respectfully requested.

Objections to the Drawings

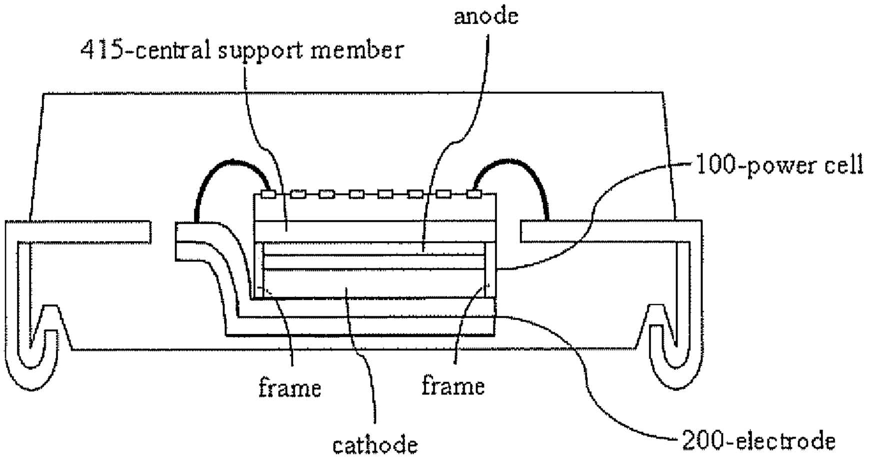
The Examiner has objected to the drawings, alleging that the drawings do not show a frame open at opposing ends with a first end exposing an anode and a second end exposing a cathode, in the context of claim 38. However, Applicant respectfully traverses the objection because the drawings clearly show such limitations.

For example, the power cell 100 shown in Fig. 1 is substantially duplicated below. However, the numerical references of Fig. 1 have been appended with their feature descriptions from the specification. In addition, the open ends of the frame 110 have been clearly identified for the Examiner's convenience. It is clear from the representation of Fig. 1 below that the frame 110 is open at opposing ends, and that one of the open ends of the frame 110 exposes the anode 140 and another of the open ends of the frame 110 exposes the cathode 120.



Power Cell 100 Shown In Fig. 1

Similarly, the integrated circuit package (ICP) 400 shown in Fig. 4 is substantially duplicated below, where several features have been labeled with their feature descriptions from the specification. It is clear from the representation of Fig. 4 below that the frame of power cell 100 is open at opposing ends, and that one of the open ends of the frame exposes the anode of the power cell 100 and another of the open ends of the frame exposes the cathode of the power cell 100.



ICP 400 Shown In Fig. 4

In view of the above, it is clear that the drawings do indeed show a frame that is open at opposing ends with a first end exposing an anode and a second end exposing a cathode, such as in the context of claim 38. Accordingly, Applicant respectfully requests the Examiner withdraw the objection to the drawings.

Rejections under 35 U.S.C. §112

The Examiner has rejected claim 38 under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. Specifically, the Examiner alleges that there is no support in the specification for a frame open at both ends with a first end exposing the anode and the second end exposing the cathode. However, as explained above, the specification clearly includes support for such a frame. That is, Figs. 1 and 4 each clearly show a frame that is open at both ends with a first end exposing an anode and a second end exposing a cathode. Moreover, paragraph [0020] of the specification provides: "In the embodiment shown in Fig. 1, the laminated power cell 100 includes a frame or carrier 110, which may be a four-sided, ***open-ended*** structure surrounding the laminated layers of the power cell 100." (Emphasis added). Thus, the frame recited in claim 38 is clearly supported by both the figures and the text of the specification of the present application. Accordingly, Applicant respectfully requests the Examiner withdraw the §112 rejection.

Rejections under 35 U.S.C. §102

The Examiner has rejected claims 45, 46 and 48 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,153,710 to McCain ("McCain"). However, these claims are currently canceled without prejudice or disclaimer, thus rendering the rejection moot.

Rejections under 35 U.S.C. §103: Queyssac in view of McCain

The Examiner has rejected claims 29, 30-33 and 36-38 under 35 U.S.C. §103 as being unpatentable over U.S. Patent No. 5,089,877 to Queyssac ("Queyssac") in view of McCain. However, the

Examiner also concedes that Queyssac does not disclose that its cell composition is as now recited in claim 29. Nonetheless, the Examiner alleges that McCain disclose such a cell composition. However, as set forth in the table below, the composition taught in McCain (see column 4, line 63 through column 5, line 9) is distinguishable from the composition now recited in claim 29.

Power Cell Element	Composition Recited in Claim 29	Composition Disclosed in McCain
Anode	Lithium	p-implanted Polyacetylene
Separator	Lithium Perchlorate	Lithium Perchlorate
Cathode	Manganese Dioxide	n-implanted Polyacetylene

Clearly, a lithium anode layer is distinguishable from a p-implanted polyacetylene anode layer. Similarly, a manganese dioxide cathode layer is distinguishable from an n-implanted polyacetylene cathode layer. Thus, along with Queyssac, McCain also fails to teach or suggest each and every element recited in claim 29 of the present application. Accordingly, Applicant respectfully requests the Examiner withdraw the §103 rejection.

Rejections under 35 U.S.C. §103: Queyssac in view of McCain and Notten

The Examiner has rejected claims 34 and 35 under 35 U.S.C. §103 as being unpatentable over Queyssac in view of McCain and U.S. Patent No. 6,346,343 to Notten, et al. ("Notten"). However, Notten fails to cure the above-described shortcomings of the combination of Queyssac and McCain. That is, Notten also fails to teach or suggest the power cell composition recited in claim 29. Consequently, the combination of Queyssac, McCain and Notten fails to support a prima facie case of obviousness of claim 29 or its dependent claims 34 and 35. Accordingly, Applicant respectfully requests the Examiner also withdraw these §103 rejections.

Conclusion

It is clear from all of the foregoing that independent claim 29 is in condition for allowance. Dependent claims 31-38 depend from and further limit independent claim 29 and, therefore, are allowable as well. It is believed that all matters set forth in the Office Action have been addressed, and that claims 29 and 31-38 are in condition for allowance. Favorable consideration and an early indication of the allowability of the claims are respectfully requested. Should the Examiner deem that an interview with Applicant's undersigned attorney would expedite consideration, the Examiner is invited to call the undersigned attorney at the telephone number indicated below.

Respectfully submitted,

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I hereby certify that this correspondence is being filed with the U.S. Patent and Trademark Office via EFS-Web on October 6, 2006.

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